

AMENDMENT UNDER 37 C.F.R. § 1.111  
U.S. Appln. No. 10/735,861  
Attorney Docket No. Q78357

**AMENDMENTS TO THE CLAIMS**

**This listing of claims will replace all prior versions and listings of claims in the application:**

**LISTING OF CLAIMS:**

Claims 1-4 (canceled).

5. (currently amended): ~~The image forming apparatus of claim 1, further comprising~~

An image forming apparatus, comprising:

transportation means which transports a sheet-like recording medium along a predetermined transportation path;  
first detection means which outputs a predetermined first detection signal when said recording medium is located at a first detection position which is behind said transportation means in the transportation direction of transporting said recording medium;

jam judging means which measures the duration of said first detection signal, and based on a result of a comparison of the measurement result with a reference time which is set in accordance with the length of said recording medium along said transportation path, judges whether a jam of said recording medium has occurred; and

length detection means which is disposed ahead of said transportation means on said transportation path and which detects the length of said recording medium along said transportation path,

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wherein said reference time is set based on a detection result obtained by said length detection means.

6. (currently amended): The image forming apparatus of claim 1, An image forming apparatus, comprising:

transportation means which transports a sheet-like recording medium along a predetermined transportation path;

first detection means which outputs a predetermined first detection signal when said recording medium is located at a first detection position which is behind said transportation means in the transportation direction of transporting said recording medium; and

jam judging means which measures the duration of said first detection signal, and based on a result of a comparison of the measurement result with a reference time which is set in accordance with the length of said recording medium along said transportation path, judges whether a jam of said recording medium has occurred;

wherein said transportation means is a fixing unit which fixes an unfixed image on said recording medium.

7. (currently amended): A jam detecting method for use in an image forming apparatus comprising transportation means which is for transporting a sheet-like recording medium along a predetermined transportation path, said method comprising the steps of:

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setting a reference time in accordance with the length of said recording medium along said transportation path;

measuring the duration of a first detection signal ~~which~~that first detection means, which is disposed at a first detection position which is behind said transportation means in the transportation direction of transporting said recording medium, outputs when said recording medium is located at said first detection position; ~~and~~

detecting, by length detection means disposed ahead of said transportation means on said transportation path, the length of said recording medium along said transportation path; and

comparing ~~thus~~the measured duration with said reference time and judging whether a jam of said recording medium has occurred based on the comparison result;

wherein said reference time is set based on a detection result obtained by said length detection means.

8. (currently amended): An image forming apparatus, comprising:  
transportation means which transports a sheet-like recording medium along a predetermined transportation path;  
~~second~~first detection means which outputs a ~~second~~first detection signal when a recording medium moves ~~passed~~past a ~~second~~first detection position which is ahead of said transportation means in the recording medium transportation direction;

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~~third~~second detection means which outputs a ~~third~~second detection signal when a recording medium moves ~~passed~~past a ~~third~~second detection position which is behind said transportation means in the recording medium transportation direction;

~~fourth~~third detection means which outputs a ~~fourth~~third detection signal when a recording medium moves ~~passed~~past a ~~fourth~~third detection position which is behind said ~~third~~second detection position in the recording medium transportation direction; and

jam judging means which judges that a jam of said recording medium has occurred, when at least one of a first condition and a second condition below is satisfied:

the first condition being a condition that during a period in which outputting of said ~~second~~first detection signal has been continuing since the start of the outputting of said ~~second~~first detection signal, outputting of said ~~third~~second detection signal has started, and during the same period, the outputting of said ~~third~~second detection signal ends,

the second condition being a condition that during a period in which outputting of said ~~third~~second detection signal has been continuing since the start of the outputting of said ~~third~~second detection signal, outputting of said ~~fourth~~third detection signal has started, and during the same period, the outputting of said ~~fourth~~third detection signal ends.

9. (currently amended): The image forming apparatus of claim 8, wherein the gap between said ~~third~~second detection position and said ~~fourth~~third detection position along said transportation path is shorter than the length of said recording medium in the recording medium transportation direction, and

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in the absence of said ~~fourth~~third detection signal during continuous outputting of said ~~third~~second detection signal since the start of the outputting of said ~~third~~second detection signal, said jam judging means judges that a jam of said recording medium has occurred.

10. (currently amended): The image forming apparatus of claim 8, wherein in the absence of said ~~third~~second detection signal after a certain period of time, which has been set in advance in accordance with the gap between said ~~second~~first and said ~~third~~second detection positions, since the start of outputting of said ~~second~~first detection signal, said jam judging means judges that a jam of said recording medium has occurred.

11. (original): The image forming apparatus of any one of claim 8, wherein said transportation means is a fixing unit which fixes an unfixed image on said recording medium.

12. (currently amended): A jam detecting method for use in an image forming apparatus comprising transportation means which is for transporting a sheet-like recording medium along a predetermined transportation path, said method comprising the steps of: detecting whether said recording medium is present each at ~~second~~first through ~~fourth~~third detection positions, said ~~second~~first detection position being behind said transportation means in the recording medium transportation direction, said ~~third~~second detection position being behind said transportation means in the recording medium transportation

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direction, and said ~~fourth~~third detection position being behind said ~~third~~second detection position in the recording medium transportation direction; and

judging that a jam of said recording medium has occurred when at least one of a first condition and a second condition below is satisfied:

the first condition being a condition that during continuous detection of the presence of said recording medium at said ~~second~~first detection position, the detection result at said ~~third~~second detection position changes to one indicative the presence of said recording medium from one indicative the absence of said recording medium, and then changes to one indicative the absence of said recording medium again,

the second condition being a condition that during continuous detection of the presence of said recording medium at said ~~third~~second detection position, the detection result at said ~~fourth~~third detection position changes to one indicative the presence of said recording medium from one indicative the absence of said recording medium, and then changes to one indicative the absence of said recording medium again.

Claim 13 (canceled).

14. (currently amended): ~~The image forming apparatus of claim 13, An image forming apparatus, comprising:~~  
~~transportation means which transports a sheet-like recording medium along a predetermined transportation path;~~

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first detection means which outputs a first detection signal when a recording medium moves past a first detection position which is behind said transportation means in the recording medium transportation direction;

second detection means which outputs a second detection signal when a recording medium moves past a second detection position which is behind said first detection position in the recording medium transportation direction; and

jam judging means which judges whether a jam of said recording medium has occurred, based on output signals from said first and said second detection means;

wherein the gap between said ~~fifth~~first and said ~~sixth~~second detection positions is shorter than the length of said recording medium in the recording medium transportation direction, and in the absence of said ~~sixth~~second detection signal during outputting of said fifth detection signal since the start of the outputting of said ~~fifth~~first detection signal, said jam judging means judges that a jam of said recording medium has occurred.

15. (currently amended): ~~The image forming apparatus of claim 13, An image forming apparatus, comprising:~~

transportation means which transports a sheet-like recording medium along a predetermined transportation path;

first detection means which outputs a first detection signal when a recording medium moves past a first detection position which is behind said transportation means in the recording medium transportation direction;

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second detection means which outputs a second detection signal when a recording medium moves past a second detection position which is behind said first detection position in the recording medium transportation direction; and

jam judging means which judges whether a jam of said recording medium has occurred, based on output signals from said first and said second detection means;

wherein the gap between said ~~fifth~~first and said ~~sixth~~second detection positions is shorter than the length of said recording medium in the recording medium transportation direction, and

when outputting of said ~~sixth~~second detection signal has started during a period in which outputting of said ~~fifth~~first detection signal has been continuing since the start of the outputting of said ~~fifth~~first detection signal and when the outputting of said ~~sixth~~second detection signal has ended during the same period, said jam judging means judges that a jam of said recording medium has occurred.

Claim 16 (canceled).

17. (currently amended): ~~The image forming apparatus of claim 13, An image forming apparatus, comprising:~~  
transportation means which transports a sheet-like recording medium along a predetermined transportation path;

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first detection means which outputs a first detection signal when a recording medium moves past a first detection position which is behind said transportation means in the recording medium transportation direction;

second detection means which outputs a second detection signal when a recording medium moves past a second detection position which is behind said first detection position in the recording medium transportation direction; and

jam judging means which judges whether a jam of said recording medium has occurred, based on output signals from said first and said second detection means;

wherein said transportation means is a fixing unit which fixes an unfixed image borne by said recording medium on said recording medium.

18. (currently amended): A jam detecting method for use in an image forming apparatus comprising transportation means which is for transporting a sheet-like recording medium along a predetermined transportation path, said method comprising the steps of:

~~detecting whether said recording medium is present at a fifth detection position, which is behind said transportation means in the recording medium transportation direction, and whether said recording medium is present at a sixth detection position, which is behind said fifth detection position in the recording medium transportation direction; and~~

~~judging whether a jam of said recording medium has occurred based on the results of the detection at said fifth and said sixth positions~~

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outputting, by a first detection means, a first detection signal when said recording medium moves past a first detection position which is behind said transportation means in the recording medium transportation direction;

outputting, by a second detection means, a second detection signal when the recording medium moves past a second detection position which is behind said first detection position in the recording medium transportation direction;

judging whether a jam of said recording medium has occurred, based on output signals from said first and second detection means;

wherein the gap between the first and second detection means is shorter than the length of said recording medium in the recording medium transportation direction, and

wherein a jam of said recording medium is judged to have occurred when outputting of said second detection signal has started during a period in which outputting of said first detection signal has been continuing since the start of the outputting of said first detection signal and when outputting of said second detection signal has ended during the same period, .